



# AFCTN Test Report 94-096

AFCTB-ID  
94-030



## Technical Publication Transfer T O 31R2-2U-432 Using:



## O'Neil & Associates, Inc. Data Supporting:

### ESC/MSL MILSTAR Program

(Contract #F19628-89-C-0131)

MIL-STD-1840A

MIL-D-28000A (IGES)

MIL-M-28001A (SGML)

MIL-R-28002A (Raster)

MIL-D-28003 (CGM)

## Quick Short Test Report

21 April 1994



Prepared for  
Electronic Systems Center  
Air Force CALS Program Office  
HQ ESC/AV-2  
4027 Colonel Glenn Hwy Suite 300  
Dayton OH 45431-1672

DTIC QUALITY INSPECTED 3

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**Technical Publication Transfer T O 31R2-2U-432**

**Using:**

**O'Neil & Associates' Data**

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**Quick Short Test Report**

**21 April 1994**

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**DTIC QUALITY INSPECTED 3**

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# **Air Force CALS Test Bed**

## ***Notification of Test Results***

**21 April 1994**

This notice documents the results of an Air Force CALS Test Bed (AFCTB) Quick Short Test Report (QSTR) evaluation of data submitted by:

**O'Neil & Associates, Inc.**

Identified as follows:

Title:	Technical Publication Transfer TO 31R2-2U-432
Program:	MILSTAR
Program Office:	ESC/MSL, Hanscom AFB
Contract No.:	F19628-89-C-0131
QSTR No.:	AFCTB-ID 94-030

Received on the following media: **9-Track Tape**

The results of the QSTR evaluation are as follows:

MIL-STD-1840A Standard	Pass
MIL-STD-1840A Media Format:	Pass
MIL-D-28000A IGES:	Pass
MIL-M-28001A SGML:	Pass
MIL-R-28002A Raster:	Pass
MIL-D-28003 CGM:	Pass

Formal results with associated disclaimer are documented and available from the AFCTB.

**Air Force CALS Test Bed  
HQ ESC/AV-2P  
4027 Colonel Glenn Highway, Suite 300  
Dayton, OH 45431-1672  
Phone: 513-257-3085      FAX: 513-257-5881**

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## **1. Introduction**

### **1.1 Background**

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.



## 1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze O'Neil & Associates' interpretation and use of the CALS standards in transferring technical publication data. O'Neil used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on a 9-track magnetic tape.

## 2. Test Parameters

Test Plan: AFCTB 94-030

Date of  
Evaluation: 21 April 1994

Evaluator: George Elwood  
Air Force CALS Test Bed  
DET 2 HQ ESC/AV-2P  
4027 Colonel Glenn Hwy  
Suite 300  
Dayton OH 45431-1672

Data  
Originator: Larry McKinley  
O'Neil & Associates, Inc.  
425 North Findlay Street  
Dayton OH 45404-2203  
(513) 461-1602

Data  
Description: Technical Manual Test  
1 Document Declaration file  
4 Document Type Definitions (DTDs)  
11 Initial Graphics Exchange Specification  
(IGES) files  
1 Text/Standard Generalized Markup Language  
(SGML) file  
15 Raster files  
2 Computer Graphics Metafile (CGM) files

Data  
Source System:

1840

**HARDWARE**

386 PC

**SOFTWARE**

AFCTN Tapetool v1.2.10

IGES

**HARDWARE**

Xerox 7650 Pro Imager 6500 W/S

---

**SOFTWARE**

Xerox Expert Drafting 5.0  
IGES Convert v5.1  
Xerox XTI v2.2  
XEROX XPI Image Conversion v2.6

Text/SGML

**HARDWARE**

386 PC

**SOFTWARE**

WordPerfect Intellitag v1.0  
Exoterica Validator v1.1

Raster

**HARDWARE**

Xerox 7650 Pro Imager  
6085 Workstation

**SOFTWARE**

Xerox XTI V2.2  
Xerox XPI Image Conversion 2.6

CGM

**HARDWARE**

HP/Apollo 425T

**SOFTWARE**

Auto-trol S5000/CGM v1.4

**Evaluation Tools Used:**

**MIL-STD-1840A (TAPE)**

SUN 3/280

AFCTN Tapetool v1.2.10 UNIX  
XSoft CAPS/CALS v40.4

**MIL-D-28000 (IGES)**

HP 735

InterCAP X-Change v7.82

SGI Indigo2

IGES Data Analysis (IDA) CALSView

Sun SparcStation 2

IDA Parser/Verifier v92  
IDA IGESView v3.05  
International TechneGroup Incorporated  
(ITI) IGES/Works v1.3  
Rosetta Technologies Prepare  
Rosetta Technologies Preview v3.2

MIL-M-28001 (SGML)

PC 486/50

Exoterica XGMLNormalizer v1.2e3.2  
Exoterica Validator v2.0 ex1  
McAfee & McAdam Sema Mark-it v2.3  
Public Domain sgmls

MIL-R-28002 (Raster)

HP 735

AFCTN xrastb.hp  
InterCAP X-Change v7.82

SGI Indigo2

AFCTN xrastb.sgi  
IDA CALSView

SUN SparcStation 2

Carberry CADLeaf Plus v3.1  
AFCTN validg4  
AFCTN xrastb.sun4  
IDA IGESView v3.0  
Island Software IslandPaint v3.0

PC 486

AFCTN validg4  
IDA IGESView Windows  
Inset Systems HiJaak Pro  
Expert Graphics RxHighlight v1.0

MIL-D-28003 (CGM)

HP 735

InterCAP X-Change v7.82

SGI Indigo 2

IDA CALSView

SUN SparcStation 2

Island Software IslandDraw v3.0

---

PC 486/50

Advanced Technology Center  
(ATC) *MetaCheck R 2.10*  
Software Publishing Corporation  
(SPC) *Harvard Graphics v3.05*  
*Lotus Freelance v2.01*  
*Corel Ventura Publisher*

**Standards**

**Tested:**

MIL-STD-1840A  
MIL-D-28000A  
MIL-M-28001A  
MIL-R-28002A  
MIL-D-28003

### **3. 1840A Analysis**

#### **3.1 External Packaging**

The tape arrived at the Air Force CALS Test Bed (AFCTB) enclosed in a box in accordance with ASTM D 3951. The exterior of the box was marked with a magnetic tape warning label, as required by MIL-STD-1840A, para. 5.3.1.3.

The tape was enclosed in a barrier bag as required by MIL-STD-1840A, para. 5.3.1.2. Inspection of the tape reel showed the label indicating the recording density, as required by MIL-STD-1840A, para. 5.3.1. Enclosed in the box was a packing list showing all files recorded on the tape.

The tape packaging meets the requirements defined in CALS MIL-STD-1840A.

#### **3.2 Transmission Envelope**

The 9-track tape received by the AFCTB contained MIL-STD-1840A files. The files were named per the standard conventions.

##### **3.2.1 Tape Formats**

The tape was run through the AFCTN *Tapetool* v1.2.10 utility. No errors were encountered while evaluating the contents of the tape labels.

The tape was read using XSoft's *CAPS read1840A* utility without any reported errors. However, when evaluating the resulting files only one DTD was present. The automatic renaming function in XSoft's tape reading utility used the same file name, which caused each new file to over write the previous file.

The physical structure of the tape meets the CALS MIL-STD-1840A requirements.

### 3.2.2 Declaration and Header Fields

No errors or warnings were reported in the Document Declaration file and data file headers. This portion of the tape meets CALS MIL-STD-1840A requirements.

## 4. IGES Analysis

The tape contained 26 IGES files. These files were visually inspected for the required conformance statement, which was found. All 26 IGES files were viewed on at least two different software applications, and a detailed analysis was conducted only on file D001Q015 due to the number of files submitted.

These files were evaluated using IDA's *Parser/Verifier* set for CALS Class I. No CALS errors were reported in the files. Basic IGES errors were reported. Investigation of the reported errors indicated that they did not impact the intended use of the files. The errors were lines and arcs that did not intersect. The errors were very small and not noticeable on the displayed and printed images.

The AFCTB has several tools for viewing IGES files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings.

The files were converted using a utility available within the AFCTB, with no reported errors. The resulting files were read into Island Software's *IslandDraw*, displayed and printed. Several files had only partial images displayed. The included output in Appendix B, Section 10 of this report highlights file Q015, which had the most noticeable partial image. The problem was traced to a single line placed on the left side of the image. The "bound data" command had no effect on the offset images. The files were unusable for illustration purposes.

The files were read using IDA's *CALSVIEW*. No problems were reported or noted during the evaluation.

The files were read using IDA's *IGESView* and *IGESView for Windows*. No problems were reported or noted during this procedure.

The files were read using InterCAPS's *X-Change*. No problems were reported or noted.

The files were read using ITI's *IGESWorks* with reported errors. See the log file in Appendix B, Section 10 for a sample of the errors. The files were displayed and printed. It was noted that the arrowheads for the selected files did not display or print.

The IGES files were converted using Rosetta Technologies' *Prepare* with reported errors. The resulting files were read into Rosetta Technologies' *Preview*, displayed and printed.

While the IGES files had no reported MIL-D-28000A errors, several files had offset images. The main problems were noted from the translations into a publishing system. The resulting image would not be usable. Basic IGES errors were noted but did not impact the displayed images.



## 5. SGML Analysis

The tape contained five SGML files; one text, and four DTDs. The DTDs were mapped as follows:

```
DOCSPEC (G003) --> BSPEC (G004)
                  |> CALSFIGS.SGM (G005)
                  |> CALSTABS.SGM (G006)
```

The AFCTB has several parsers available for evaluating submitted DTD and text files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. These products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings unless specified in the report. Changes to DTD or text files required by each system are not documented in the report.

The text and DTD files were evaluated using Exoterica's *Validator ex1* parser. No errors or warnings were reported.

The text and DTD files were tested using Exoterica's *XGML-Normalizer* parser. No errors or warnings were reported.

The text and DTD files were evaluated using McAfee & McAdam's *Sema Mark-it v2.3* parser. No errors or warnings were reported.

The text and DTD files were evaluated using the Public Domain *sgmls v1.1* parser with no reported errors.

Because no Format Output Specification Instance (FOSI) was provided, publishing was not attempted.

The SGML files meet the CALS MIL-M-28001A specification.

## 6. Raster Analysis

The tape contained eight Raster files. Because of the number of Raster files only file D001R038 was printed. However, all files were viewed using at least one software application. In general, the white on black made the images hard to see, and this could be carried over to the printed pages.

The AFCTB has several tools for viewing Raster files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings.

All files were evaluated using the AFCTN *validg4* utility, and the AFCTN *xrastb.sun4* viewing utility. Both programs reported all files meet the CALS MIL-R-28002A specification.

The files were converted using a utility available within the AFCTB without a reported error. The resulting files were read into Island Software's *IslandPaint* displayed and printed.

The files were read using IDA's *CALSVIEW*, displayed and printed.

The files were read into IDA's *IGESVIEW* and *IGESVIEW for Windows* without a reported error.

The files were read into Inset Systems' *HiJaak for Windows* without a reported error.

The files were read using InterCAP's *X-Change* without a reported error.

The files were converted using Rosetta Technologies' *Prepare* without a reported error. The resulting files were read into Rosetta Technologies' *Preview* and displayed.

The files were imported into Expert Graphics' *RxHighlight* and displayed without a reported error.

The Raster files meet the CALS MIL-R-28002A specification.

---

## 7. CGM Analysis

The tape contained two CGM files. The files were evaluated using ATC's *MetaCheck* with CALS options. This utility reported no CALS or basic CGM errors, and the files meet the CALS MIL-D-28003 specification.

The files were evaluated using the beta AFCTN *validcgm* utility. This utility reported no errors.

The AFCTB has several tools for viewing CGM files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings.

A general comment on both files: All applications displayed the images initially black on black. The background color had to be changed or removed before the images were visible. Also noted was a wide range of text sizes in file D001C001.

The files were converted using a utility available within the AFCTB, without a reported error. The resulting files were read into Island Software's *IslandDraw v3.1*, displayed and printed. The background had to be removed in order to see the image. The text size in file D001C001 exceeded the right margin.

The files were read into Carberry's *CADLeaf* software and displayed. The background color had to be changed in order to see the image. The text in file C001 exceeded the margin of the display. The selection of the proportional text font option of *CADLeaf* resulted in a correct display.

The files were read into IDA's *CALSVIEW*. Because the background color could not be changed, nothing displayed.

The files were imported into Lotus' *Freelance* and displayed. The background color had to be removed in order to see the graphics. The text font appeared very small.

The files were imported into SPC's *Harvard Graphics v3.05* without a reported error. The background color had to be

changed in order to see the image. The text in file C001 exceeded the right margin of the graphics.

The files were read into Inset Systems' *HiJaak Pro* without a reported error. The text in file C001 was outset down into the line and basic graphics.

The files were imported directly into Island Software's *IslandDraw v4.0* without a reported error. The image required work on the background in order to see the graphics.

The files were read into InterCAP's *X-Change* without a reported error. The black background had to be removed in order to see the image. This was accomplished by "painting" over the display area with other windows.

The files were imported into Corel's *Ventura Publisher* without a reported error. The background color problem was not noted. The selected text font for file C001 was very small.

While the CGM files were reported without error and meet the CALS MIL-D-28003 specification, the black background caused problems in almost every application used by the AFCTB. The text in file C001 was handled differently by most applications due to fonts ranging from very small to large.

## 8. Conclusions and Recommendations

The physical structure of the tape had no reported errors, and meets the requirements of ANSI 3.27 and the CALS MIL-STD-1840A.

The IGES files meet the CALS MIL-D-28001A specification. Some errors in displacement were noted. The basic IGES errors reported were not visual in the intended use of the files.

The SGML files parsed without error using four different parsers, and meet the CALS MIL-M-28001A specification.

The Raster files meet the CALS MIL-R-28002A specification. However, the white on black image may cause problems when publishing.

The CGM files meet the CALS MIL-D-28003 specification. However, the black background had to be removed in most applications in order to make the image usable.

The tape submitted by O'Neil & Associates, Inc. meets the CALS MIL-STD-1840A requirements. While all files on the tape meet the required specifications, many applications within the AFCTB had problems with the files.

## 9. Appendix A - Tapetool Report Logs

### 9.1 Tape Catalog

CALS Test Network Catalog Evaluation - Version 1.2; Release 10 (C)

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information

ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes  
for Information Interchange

ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Wed Apr 20 15:40:05 1994

MIL-STD-1840A File Catalog

File Set Directory: /cals/u1210/Set062

Page: 1

File Name	File Type	Record Format/ Length	Block Length/Total	Selected/ Extracted
D001	Document Declaration	D/00260	02048/000001	Extracted
D001C001	CGM	F/00080	00800/000003	Extracted
D001C002	CGM	F/00080	00800/000003	Extracted
D001G003	DTD	D/00260	02048/000002	Extracted
D001G004	DTD	D/00260	02048/000013	Extracted
D001G005	DTD	D/00260	02048/000002	Extracted
D001G006	DTD	D/00260	02048/000002	Extracted
D001Q007	IGES	F/00080	02000/000017	Extracted
D001Q008	IGES	F/00080	02000/000007	Extracted
<<<<< PART OF LOG FILE REMOVED HERE >>>>>				
D001R033	Raster	F/00128	02048/000030	Extracted
D001R034	Raster	F/00128	02048/000022	Extracted
<<<<< PART OF LOG FILE REMOVED HERE >>>>>				
D001T041	Text	D/00260	02048/000193	Extracted

Catalog Process terminated normally.

---

## 9.2 Tape Evaluation Log

CALS Test Network Tape Evaluation - Version 1.2; Release 10 (C)

Standards referenced:

ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes  
for Information Interchange  
ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Wed Apr 20 15:35:50 1994

ANSI Tape Import Log

Allocating tape drive /dev/rmt0...

/dev/rmt0 allocated.

VOL1ONA001

4

Label Identifier: VOL1  
Volume Identifier: ONA001  
Volume Accessibility:  
Owner Identifier:  
Label Standard Version: 4

HDR1D001                    ONA00100010001000000 94104 00000 000000

Label Identifier: HDR1  
File Identifier: D001  
File Set Identifier: ONA001  
File Section Number: 0001  
File Sequence Number: 0001  
Generation Number: 0000  
Generation Version Number: 00  
Creation Date: 94104  
Expiration Date: 00000  
File Accessibility:  
Block Count: 000000  
Implementation Identifier:

<<<<< PART OF LOG FILE REMOVED HERE >>>>>

##### End of Volume ONA001 #####  
##### End Of Tape File Set #####

Deallocating /dev/rmt0...

Tape Import Process terminated normally.

### 9.3 Tape File Set Validation Log

CALS Test Network File Set Evaluation - Version 1.2; Release 10 (C)

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information

Wed Apr 20 15:40:05 1994

MIL-STD-1840A File Set Evaluation Log

File Set: Set062

Found file: D001

Extracting Document Declaration Header Records...

Evaluating Document Declaration Header Records...

srcsys: O'Neil & Assoc. CAGE 83007

srcdocid: TO 31R2-2U-432

srcrelid: NONE

chglvl: ORIGINAL

dteisu: 19940413

dstsys: Raytheon (CAGE 49956)

dstdocid: TO 31R2-2U-432

dstrelid: NONE

dtetrm: 19940414

dlvacc: NONE

filcnt: C2,G4,Q26,R8,T1

ttlcls: UNCLASSIFIED

doccls: UNCLASSIFIED

doctyp: Technical Publication

docttl: NONE

Found file: D001C001

Extracting CGM Header Records...

Evaluating CGM Header Records...

srcdocid: TO 31R2-2U-432

dstdocid: TO 31R2-2U-432

txtfilid: W

figid: INTRO-CAUTION-ESD

srcgph: ESDCAU

doccls: UNCLASSIFIED

notes: NONE



<<<< PART OF LOG FILE REMOVED HERE >>>>

Evaluating numbering scheme...

No errors were encountered during numbering scheme evaluation.

Numbering scheme evaluation complete.

Checking file count...

No errors were encountered during file count verification.

File Count verification complete.

No errors were encountered in Document D001.

No errors were encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.

## 9.4 Other Tape Reading Logs

```
/cals/caps/Bin/read1840A: --- Read declaration file 'D001' ---  
/cals/caps/Bin/read1840A: writing data file 'aftb9430/TO31R2-2U-432/  
ESDCAU.C.cgm'.  
/cals/caps/Bin/read1840A: writing data file 'aftb9430/TO31R2-2U-432/  
TXTRES.D.C.cgm'.  
/cals/caps/Bin/read1840A: writing data file 'aftb9430/TO31R2-2U-432/  
TO31R22U432.G.dtd'.  
/cals/caps/Bin/read1840A: writing data file 'aftb9430/TO31R2-2U-432/  
TO31R22U432.G.dtd'.  
/cals/caps/Bin/read1840A: writing data file 'aftb9430/TO31R2-2U-432/  
TO31R22U432.G.dtd'.  
/cals/caps/Bin/read1840A: writing data file 'aftb9430/TO31R2-2U-432/  
TO31R22U432.G.dtd'.  
/cals/caps/Bin/read1840A: writing data file 'aftb9430/TO31R2-2U-432/  
M0404.Q.igs'.  
/cals/caps/Bin/read1840A: writing data file 'aftb9430/TO31R2-2U-432/  
M0405.Q.igs'.
```

<<<<< PART OF LOG FILE REMOVED HERE >>>>>

```
/cals/caps/Bin/read1840A: writing data file 'aftb9430/TO31R2-2U-432/  
M04B30.R.cci'.
```

<<<<< PART OF LOG FILE REMOVED HERE >>>>>

```
/cals/caps/Bin/read1840A: writing data file 'aftb9430/TO31R2-2U-432/  
W.T.sgm'.  
-- declaration file indicates 1 files of type T  
-- declaration file indicates 4 files of type G  
-- declaration file indicates 0 files of type H  
-- declaration file indicates 26 files of type Q  
-- declaration file indicates 8 files of type R  
-- declaration file indicates 2 files of type C  
-- declaration file indicates 0 files of type X  
-- declaration file indicates 0 files of type P  
-- declaration file indicates 0 files of type Z
```

## 10. Appendix B - Detailed IGES Analysis

### 10.1 File D001Q014

#### 10.1.1 Parser/Verifier Log

```
*****
*****  IGES PARSER/VERIFIER  *****
*****      MARCH 1993      *****
*****  IGES Data Analysis  *****
*****    (708) 344-1815    *****
*****
```

Input file is q015.igs

Checking conformance to CALS Class I (MIL-D-28000A 2/10/92)  
Today is April 20, 1994 5:15 PM

```
*****
*****  CHECK FILE SYNTAX  *****
*****
```

Section	Records
Start	5
Global	3
Directory	3946 ( 1973 Entities)
Parameter	3384
Terminate	1

No syntax errors detected.

```
*****
*****  SUMMARY AND STATISTICS  ****
*****
```

#### \*\*\* File and Product Name Information \*\*\*

```
File name from sender    = 'M04.20.dwg'
File creation Date.Time  = '940307.092446'
Model change Date.Time   = ''
Author                   = 'Gary Hahn'
Department                = ''
Product name from sender = 'Xerox Expert'
Destination product name = ''
```

---

\*\*\* Parameter Delimiters \*\*\*

Delimiter = ','  
Terminator = ';'

\*\*\* Originating System Data \*\*\*

System ID = 'Xerox Expert version 5.0'  
Preprocessor version = '5.0'  
Specification version = 6 (IGES 4.0)

\*\*\* Precision levels \*\*\*

Integer bits = 16  
Floating point - Exponent = 38 Mantissa = 7  
Double precision - Exponent = 38 Mantissa = 7

\*\*\* Global Model Data \*\*\*

Model scale = 1.0000E+00  
Unit flag = 1  
Units = 'INCH'  
Line weights = 3  
Maximum line thickness = 4.166667E-02  
Minimum line thickness = 1.388889E-02  
Granularity = 1.000000E-05  
Maximum coordinate = 1.100000E+01

Drafting standard applicable to original data is not specified.

\*\*\* Status Flag Summary \*\*\*

Blank status:	Visible	1973
	Blanked	0
Independence:	Independent	1881
	Physically Subordinate	90
	Logically Subordinate	2
	Totally Subordinate	0
Entity use:	Geometry	1934
	Annotation	36
	Definition	2
	Other	1
	Logical/Positional	0
	2D parametric	0
	Construction geometry	0
	Not Specified	0

Hierarchy:    Structure DE applies    1973  
                  Subordinate DE applies    0  
                  Hierarchy property applies    0  
                  Not Specified    0

\*\*\* Entity Occurrence Counts \*\*\*

Entity	Form	Level	Count	Type
-----	----	-----	-----	-----
100	0	0	176	Circular arc
102	0	0	18	Composite curve
104	1	0	539	Conic arc - ellipse
110	0	0	644	Line
124	0	0	539	Transformation matrix
212	0	0	36	General note
230	0	0	18	Sectioned area (Standard Crosshatching)
404	0	0	1	Drawing
406	16	0	1	Property - Drawing size
410	0	0	1	View - Orthographic parallel

\*\*\* Entity Count by Level \*\*\*

Level	Count
0	1973

\*\*\* Labeling Information \*\*\*

100% of the entities are labeled.

Unlabeled            0

Label	Count	Label	Count	Label	Count
View	1*	Line	644*	GNote	36*
Arc	176*	Matrix	539*	Ellipse	539*
Composit	18	Section	18*	Property	1
Drawing	1*				

NITPICK 2327: One or more of the flagged entity labels are not right-justified.

\*\*\* Line Fonts Used in Data \*\*\*

100	102	104	106	108	110	112	114	
-	-	-	-	-	-	-	-	Undefined
176	18	539	-	-	625	-	-	Solid
-	-	-	-	-	-	-	-	Dashed
-	-	-	-	-	-	-	-	Phantom
-	-	-	-	-	15	-	-	Center-line
-	-	-	-	-	4	-	-	Dotted
-	-	-	-	-	-	-	-	User defined
116	118	120	122	124	125	126	128	
-	-	-	-	-	-	-	-	Undefined
-	-	-	-	539	-	-	-	Solid
-	-	-	-	-	-	-	-	Dashed

<<<<< PART OF LOG FILE REMOVED HERE >>>>>

\*\*\* Line Widths Used in Data \*\*\*

Weight	Count	Width
Defaulted	1317	(0.0139)
1	614	(0.0139)
2	8	(0.0278)
3	34	(0.0417)

\*\*\* Colors Used in Data \*\*\*

Defaulted	578
Green	1395

\*\*\*\*\*  
 \*\*\*\*\* ENTITY ANALYSIS \*\*\*\*\*  
 \*\*\*\*\*

\*\*\* Entity type: 100

ERROR 2242: Radii not equal at D 3511; difference is 1.211471E-05.

\*\*\* Entity type: 102

ERROR 2033: End points of curves D 2879 and D 2881 disjoint by  
2.169216E-02 at D 2885.  
NOTE 2391: Start point D 2879 and D 2881 are the same, possible reversal  
of D 2881.  
ERROR 2033: Messages regarding disjoint composite curves suppressed.  
NOTE 2391: Messages regarding reversed entities suppressed.

\*\*\* Entity type: 104

WARNING 2265: Start point off conic by 1.364991E-05 at D 87.  
WARNING 2039: End point off conic by 1.249289E-05 at D 87.  
WARNING 2265: Start point off conic by 1.249289E-05 at D 91.  
WARNING 2265: Messages regarding invalid start point suppressed.  
WARNING 2039: Messages regarding conic end points suppressed.

\*\*\* Entity type: 110

-- 644 lines averaging 2.664226E-01 units --

\*\*\* Entity type: 124

539 transformation matrices, 539 non-zero translations.  
NOTE 2341: 539 matrices contain translation information.

\*\*\* Entity type: 212

36 text strings in data file.  
Average text aspect ratio in file is 0.9071366.  
Minimum text aspect ratio in file is 0.8422619.  
Maximum text aspect ratio in file is 0.9176479.

FONTS USED IN FILE

FONT	COUNT	NAME
1	36	Default ASCII Style

\*\*\* Entity type: 230

NITPICK 2076: Entity does not have Annotation flag set at D 2887.  
NITPICK 2076: Entity does not have Annotation flag set at D 2899.  
NITPICK 2076: Messages regarding entity use (annotation) suppressed.

\*\*\* Entity type: 404

NITPICK 2074: Entity use flag must be 1 for Drawing entity at D 3945.  
Drawing at D 3945 contains 1 views.  
Drawing at D 3945 contains 0 annotation entities.

\*\*\* Entity type: 406

\*\*\* Entity type: 410

NITPICK 2073: Entity use flag must be 1 for View entity at D 1.  
Scale of view at D 1 is 1.000000E+00.  
Orthographic View entity at D 1 has 0 clipping planes specified.  
XMIN = Not Set XMAX = Not Set  
YMIN = Not Set YMAX = Not Set  
ZMIN = Not Set ZMAX = Not Set

\*\*\* Message Summary \*\*\*

2007: 36 Mathematical discontinuities.  
2015: 92 Mathematically incorrect definitions.  
2016: 20 Invalid entity use flag.

\*\*\* Error Summary \*\*\*

0 fatal errors  
0 severe errors  
37 errors  
91 warnings  
0 cautions  
21 nitpicks  
19 notes

\*\*\* End of Analysis of q015.igs \*\*\*



## 10.1.2 Parser Log - IGESWorks

IGES/Works v1.4.1  
International TechneGroup Incorporated  
Validation Logfile

Date: April 21, 1994  
Model: q014

\*\*\*\*\* Validation Parameters \*\*\*\*\*

### TOLERANCE CONFIGURATION VALUES

-----

ZERO_TOL	= 1.000000e-13
MODEL_SPACE_PNT_COIN_TOL	= 1.000000e-03
PARM_SPACE_PNT_COIN_TOL	= 1.000000e-08
ISO_PARM_CURVE_TOL	= 1.000000e-08
NON_CONV_TOL	= 1.000000e-12
KNOT_COIN_TOL	= 1.000000e-10
SAME_INTER_TOL	= 1.000000e-12
PARALLEL_LINES_TOL	= 1.000000e-07
ANGLE_COIN_TOL	= 1.000000e-05
PNT_PROJ_TOL	= 1.000000e-07
COLIN_TOL	= 1.000000e-07
COPLANAR_TOL	= 1.000000e-08
ZERO_NORMAL_TOL	= 1.000000e-06
SAME_TANGENT_TOL	= 1.000000e-04
SAME_CURVATURE_TOL	= 1.000000e-04
SAME_DERIVATIVE_TOL	= 1.000000e-03
MODEL_LINEAR_APPROX_TOL	= 2.220446e-16

\*\*\*\*\* Entity Listing Before Validation \*\*\*\*\*

Count	Type	Form	Description
----	----	----	-----
289	100	0	Circular Arc
561	104	1	Ellipse
1557	110	0	Line
561	124	0	Transformation Matrix
30	212	0	General Note (Simple)
1	404	0	Drawing (form 0)
1	406	16	Property (Drawing Size)
1	410	0	View

3001 - Number of entities in selection list

\*\*\*\*\* Entity Validation \*\*\*\*\*

\*\*\* Warning (IEVM\_LABEL\_NOT\_RJ) \*\*\*

(DE 1, TF 410:0) The Label Display field in this entity's DE section was not set for right justification.

Action taken: The Label Display field has been set to be right-justified.

<<<< PART OF LOG FILE REMOVED HERE >>>>

\*\*\* Warning (IEVM\_BAD\_VECTOR\_124) \*\*\*

(DE 3, TF 124:0) This Transformation Matrix entity (124) has a a column that is not a unit vector within the stated tolerance.

Action taken: All vectors have been unitized.

<<<< PART OF LOG FILE REMOVED HERE >>>>

\*\*\* Warning (IEVM\_BAD\_START\_POINT\_104) \*\*\*

(DE 5, TF 104:1) The start point for this Conic Arc entity (104) is not on the conic. Start point value found was 5.4918360e-02, 1.8773080e-02.

Action taken: The start point has been moved 2.7957111e-04 units, from 5.4918360e-02, 1.8773080e-02 to 5.5197931e-02, 1.8773080e-02.

<<<< PART OF LOG FILE REMOVED HERE >>>>

\*\*\* Warning (IEVM\_BAD\_END\_POINT\_104) \*\*\*

(DE 9, TF 104:1) The end point for this Conic Arc entity (104) is not on the conic. Start point value found was -5.5693090e-07, 4.0716660e-02.

Action taken: The end point has been moved 2.1582679e-05 units, from -5.5693090e-07, 4.0716660e-02 to 0.0000000e+00, 4.0695085e-02.

<<<< PART OF LOG FILE REMOVED HERE >>>>

Entity Validation Summary:

Type	Form	Entity Count	Number Valid	Number of Corrected		Number of Uncorrected	
				Warnings	Errors	Warnings	Errors
Global Section		1	1	0	0	0	0
100	0	289	0	289	0	0	0
104	1	561	0	561	330	0	0
110	0	1557	0	1557	0	0	0
124	0	561	0	561	524	0	0
212	0	30	0	30	0	0	0
404	0	1	0	1	0	0	0
406	16	1	1	0	0	0	0
410	0	1	0	1	0	0	0
Totals:		3002	2	3000	854	0	0

The following message was issued and suppressed 2995 times:

The Label Display field in this entity's DE section was not set for right justification.

The following message was issued and suppressed 154 times:

The start point for this Conic Arc entity (104) is not on the conic.  
Start point value found was  $%.7e$ ,  $%.7e$ .

The following message was issued and suppressed 166 times:

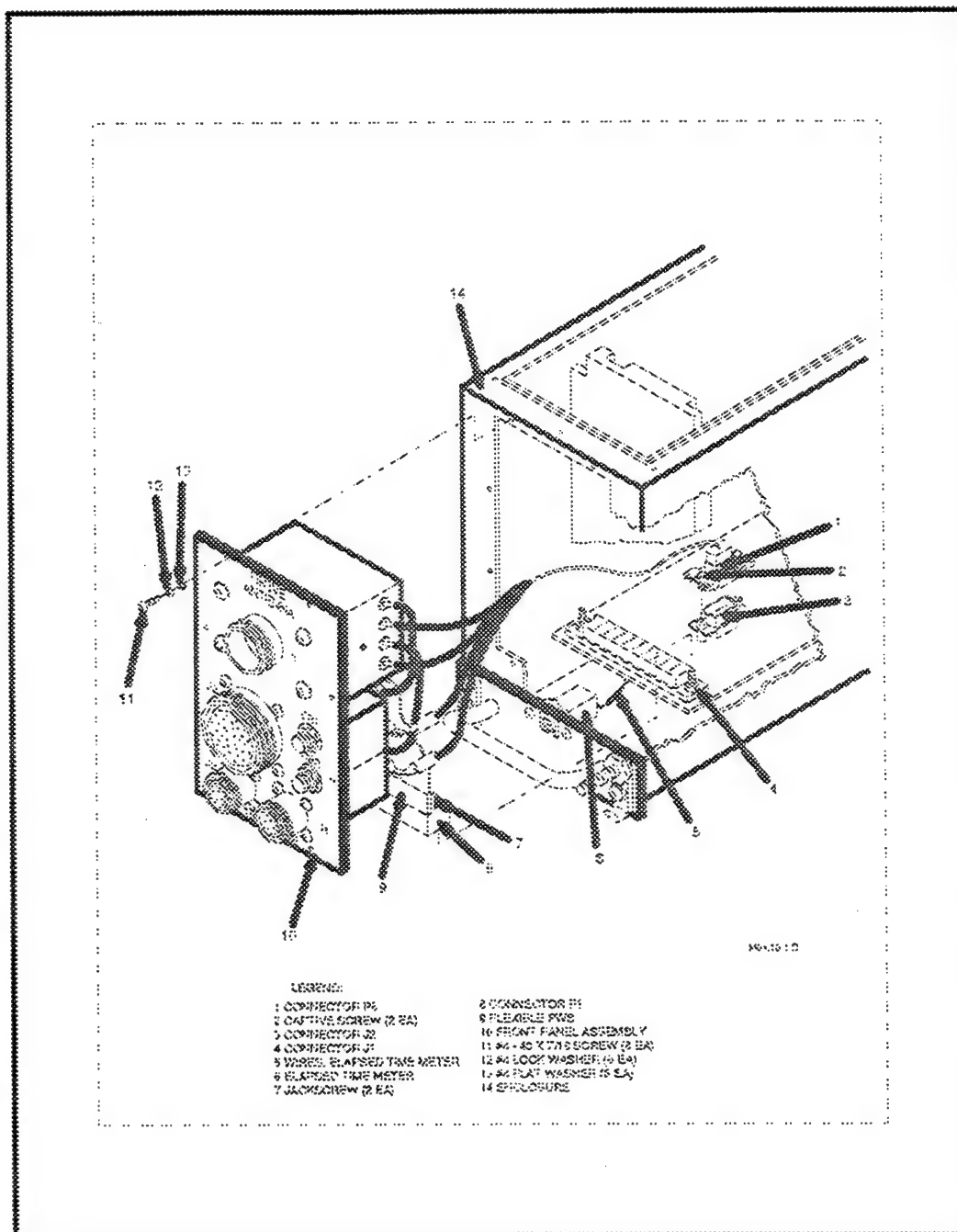
The end point for this Conic Arc entity (104) is not on the conic.  
Start point value found was  $%.7e$ ,  $%.7e$ .

The following message was issued and suppressed 519 times:

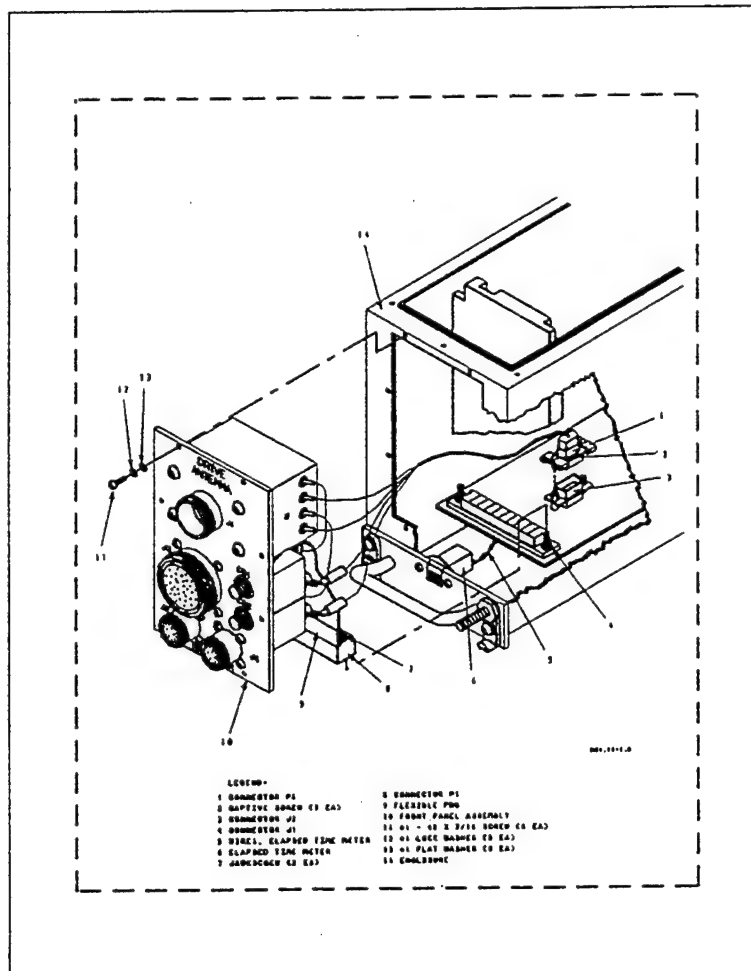
This Transformation Matrix entity (124) has a a column that is not a unit vector within the stated tolerance.

A message is suppressed when it has been issued more than 5 times.  
This value is controlled by the 'MAX\_MESSAGE' configuration parameter.

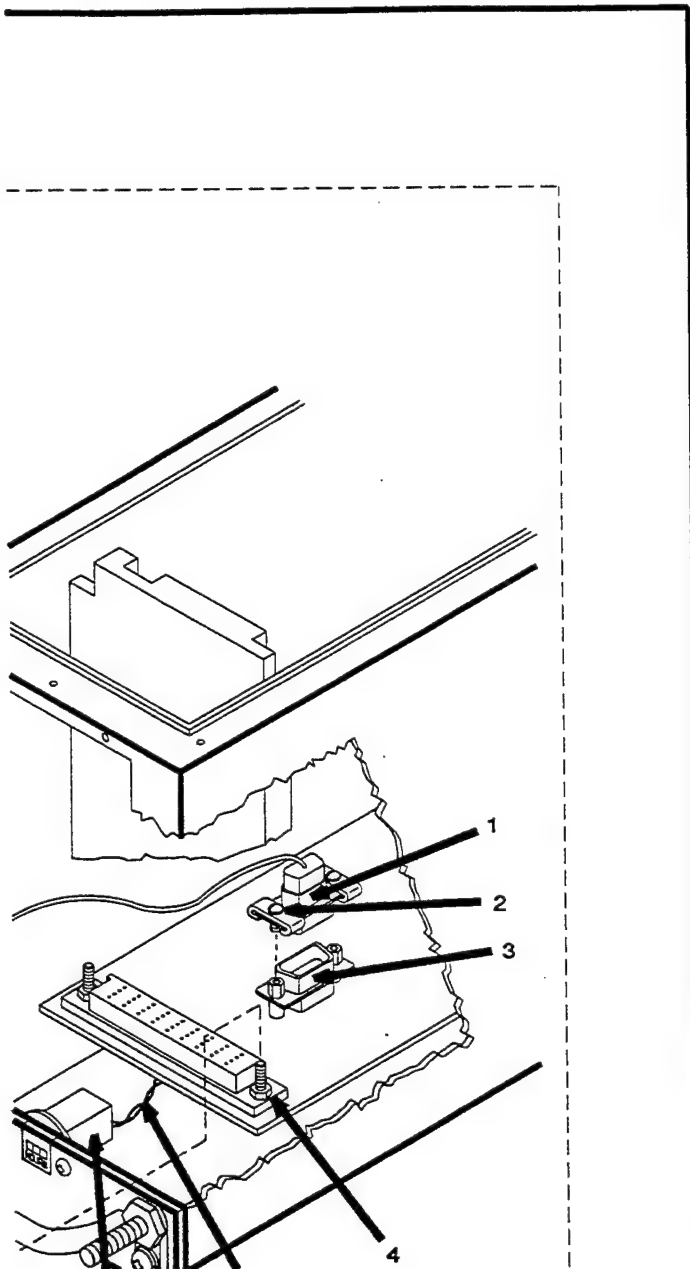
### 10.1.3 Output CALSView



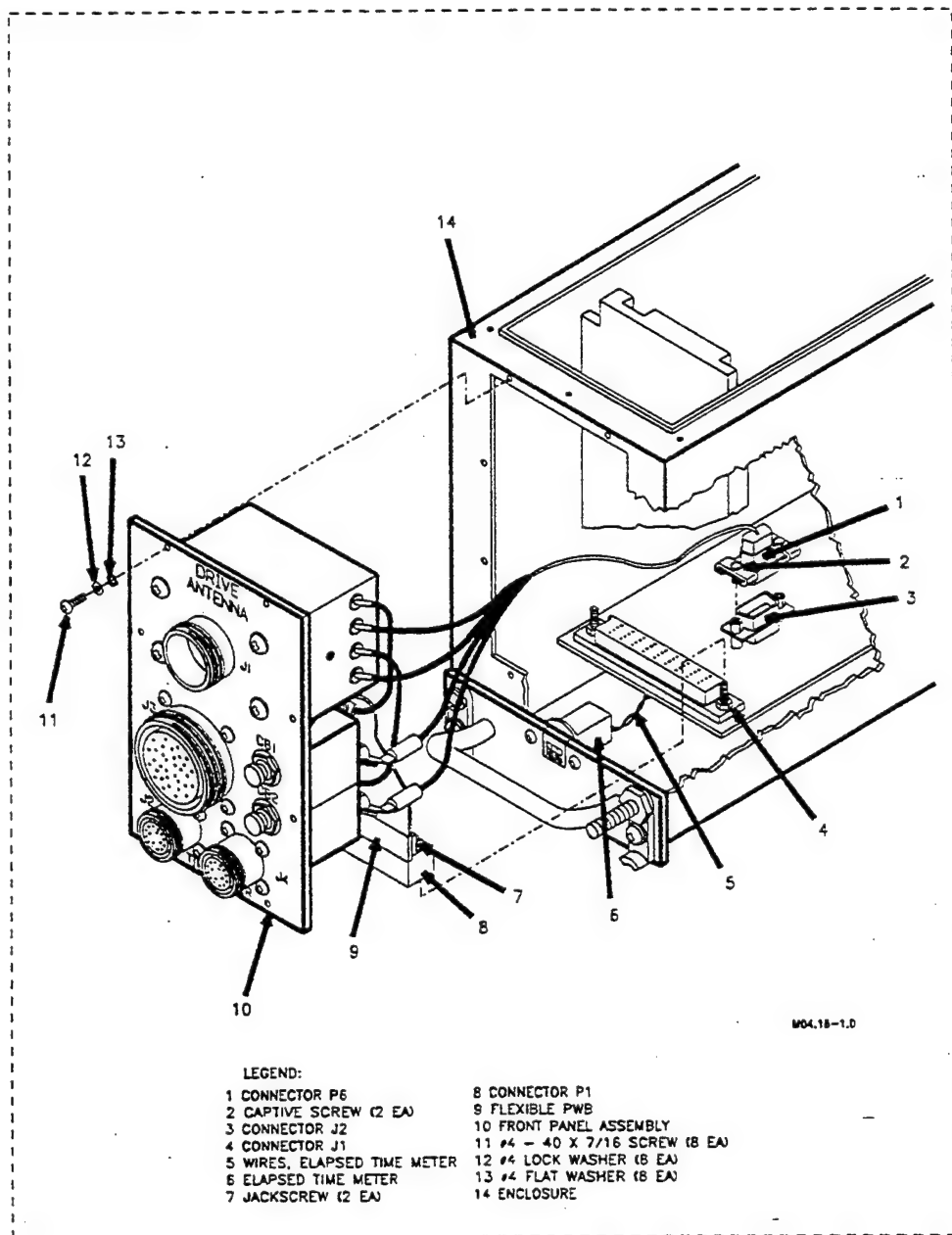
## 10.1.4 Output IGESWorks



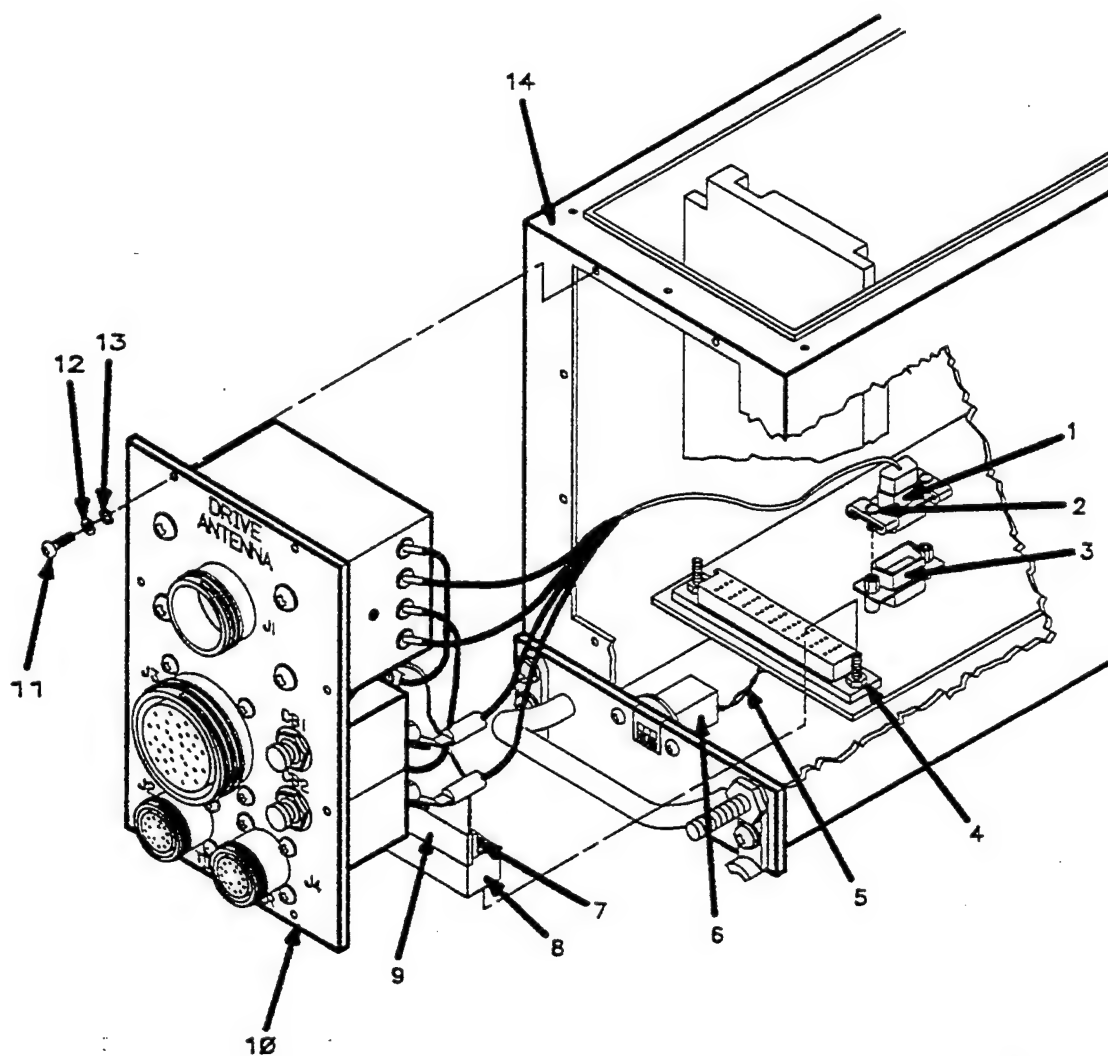
### 10.1.5 Output Island Draw



## 10.1.6 Output Preview



## 10.1.7 Output X-Change



MB4,18-LD

### LEGEND:

- |                             |                                |
|-----------------------------|--------------------------------|
| 1 CONNECTOR P8              | 8 CONNECTOR P1                 |
| 2 CAPTIVE SCREW (2 EA)      | 9 FLEXIBLE PWB                 |
| 3 CONNECTOR J2              | 10 FRONT PANEL ASSEMBLY        |
| 4 CONNECTOR J1              | 11 #4 - 48 X 7/16 SCREW (8 EA) |
| 5 WIRES, ELAPSED TIME METER | 12 #4 LOCK WASHER (8 EA)       |
| 6 ELAPSED TIME METER        | 13 #4 FLAT WASHER (8 EA)       |
| 7 JACKSCREW (2 EA)          | 14 ENCLOSURE                   |



## **11. Appendix C - Detailed SGML Analysis**

### **11.1 Exoterica XGMLNormalizer Parser**

No reported errors or warnings.

### **11.2 Exoterica Validator**

No reported errors or warnings.

### **11.3 Sema Mark-it Log**

No reported errors or warnings.

### **11.4 Public Domain sgmls Log**

No reported errors or warnings using version 1.0.

## 12. Appendix D - Detailed Raster Analysis

### 12.1 File D001R038

#### 12.1.1 Output IslandPaint

**HOW TO USE THE ILLUSTRATED PARTS BREAKDOWN**

The diagram illustrates the process of finding a part number in the IPB. It shows three main components:

- Table of Contents (Top):** A table listing various parts and their locations. A callout '3' points to a specific entry in the table.
- Table of Contents (Bottom Left):** A detailed list of parts and their locations. A callout '1' points to a specific entry in the table.
- Technical Drawing (Bottom Right):** A detailed drawing of a mechanical assembly. A callout '2' points to a specific part in the drawing.

**WHEN THE PART NUMBER IS NOT KNOWN**

1. Determine the location and application of the part. Turn to the Table of Contents, Maintenance Parts List and select the title that will most likely contain the part. Note the page number.
2. Turn to the page indicated and locate the part on the illustration. Note the figure and index number assigned to the part.
3. Refer to the associated MPL for information regarding the part.

---

## 13. Appendix E - Detailed CGM Analysis

### 13.1 File D001C001

#### 13.1.1 Parser Log MetaCheck

MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer  
Copyright 1988-91 CGM Technology Software  
Execution Date: 04/20/94 Time: 16:50:10

Metafile Examined : i:\94030\c001.cgm

Pictures Examined : All  
Elements Examined : All  
Bytes Examined : All

===== Trace Report =====

Tracing not selected.

===== CGM Conformance Violation Report =====

No Errors Detected

===== CALS CGM Profile (MIL-D-28003) Report =====

No profile discrepancies detected.

===== Conformance Summary Report =====

MetaCheck Version 2.05 -- CGM/MIL-D-28003 Conformance Analyzer  
Copyright 1988-91 CGM Technology Software  
Execution Date: 04/20/94 Time: 16:50:11

Name of CGM under test: i:\94030\c001.cgm  
Encoding : Binary

Pictures Examined : All  
Elements Examined : All  
Bytes Examined : All

BEGIN METAFILE string : "esdcau"  
METAFILE DESCRIPTION : "AUTO-TROL/REL-1.0 MIL-D-28003/BASIC-1"

Picture 1 starts at octet offset 124; string contains: "esdcau"

Conformance Summary : This file conforms to the CGM specification.

This file meets the CALS CGM Profile (MIL-D-28003).

Summary of Testing Performed and Errors Found:

1 Pictures Tested  
88 Elements Tested  
1212 Octets Tested

```
=====
|   No Errors Were Detected   |
=====
```

===== End of Conformance Report =====

### 13.1.2 validcgm Log

Analysis for file c001.cgm using table table

(0, 1) occurred 1 time  
(0, 2) occurred 1 time  
(0, 3) occurred 1 time  
(0, 4) occurred 1 time  
(0, 5) occurred 1 time  
(1, 1) occurred 1 time  
(1, 2) occurred 1 time  
(1, 7) occurred 1 time  
(1, 8) occurred 1 time  
(1, 9) occurred 1 time  
(1, 11) occurred 1 time  
(1, 13) occurred 1 time  
(2, 1) occurred 1 time  
(2, 3) occurred 1 time  
(2, 4) occurred 1 time  
(2, 5) occurred 1 time  
(2, 6) occurred 1 time  
(2, 7) occurred 1 time  
(4, 1) occurred 34 times  
(4, 4) occurred 1 time  
(4, 7) occurred 6 times  
(5, 3) occurred 2 times  
(5, 10) occurred 1 time  
(5, 15) occurred 1 time  
(5, 16) occurred 1 time  
(5, 18) occurred 1 time  
(5, 22) occurred 1 time  
(5, 28) occurred 1 time  
(5, 30) occurred 1 time  
(5, 34) occurred 20 times

### 13.1.3 Output IslandDraw

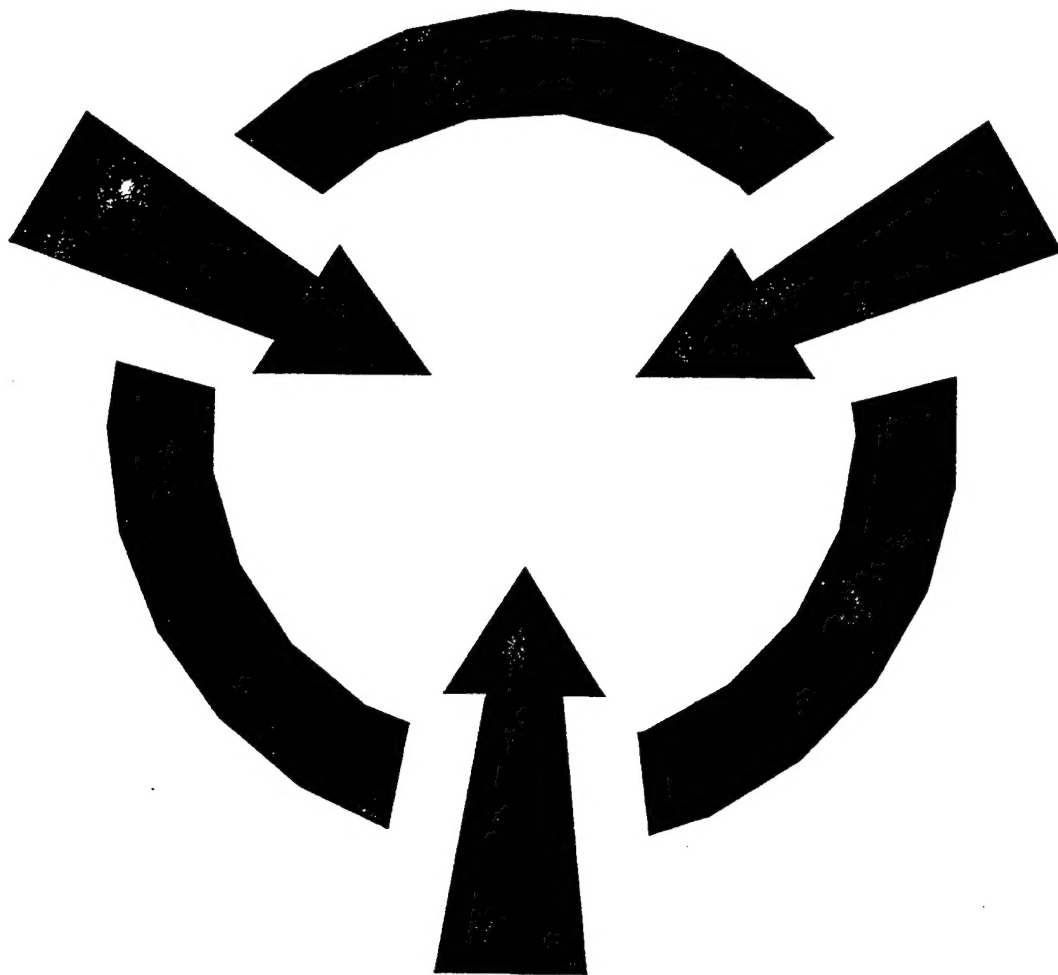
CAUTION



### 13.1.4 Output CALSView

CAUTION

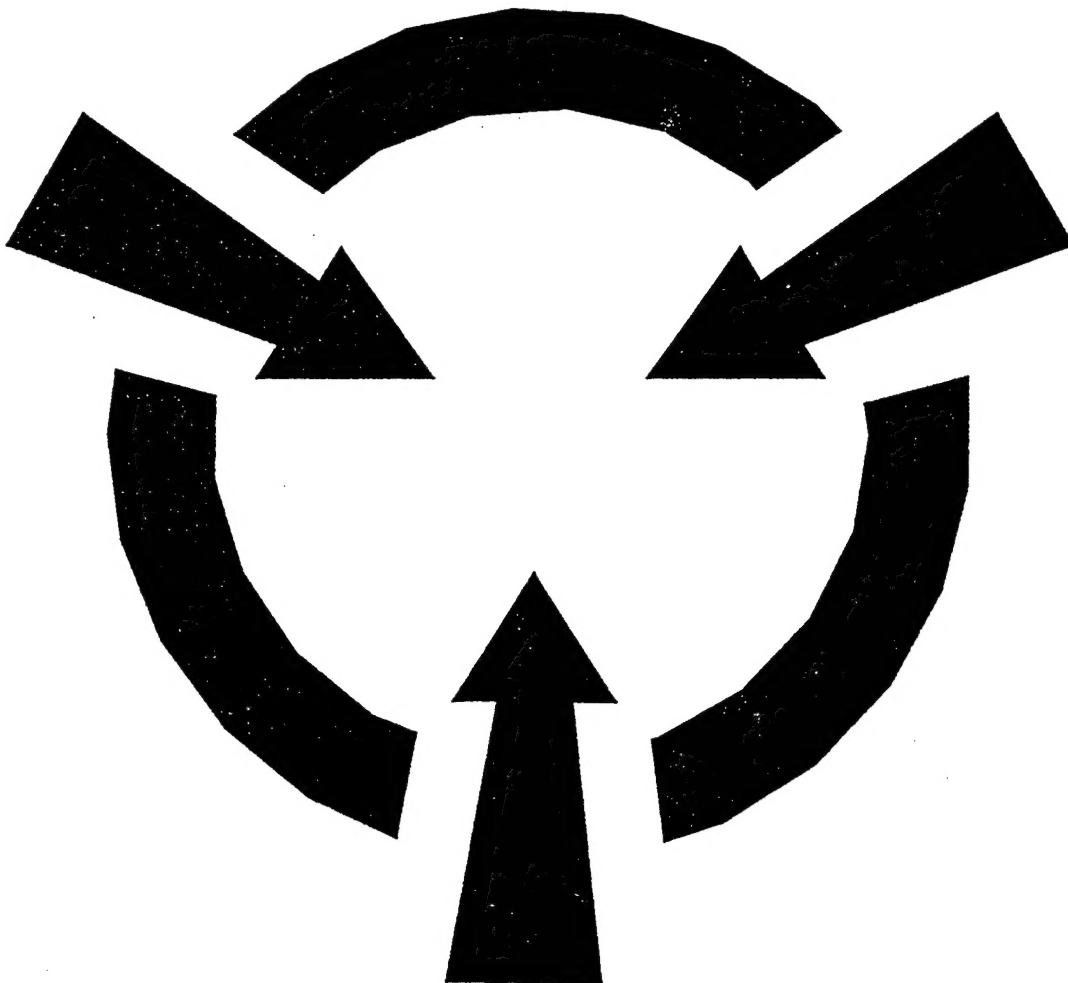
---



### 13.1.5 Output Freelance

CAUTION

---

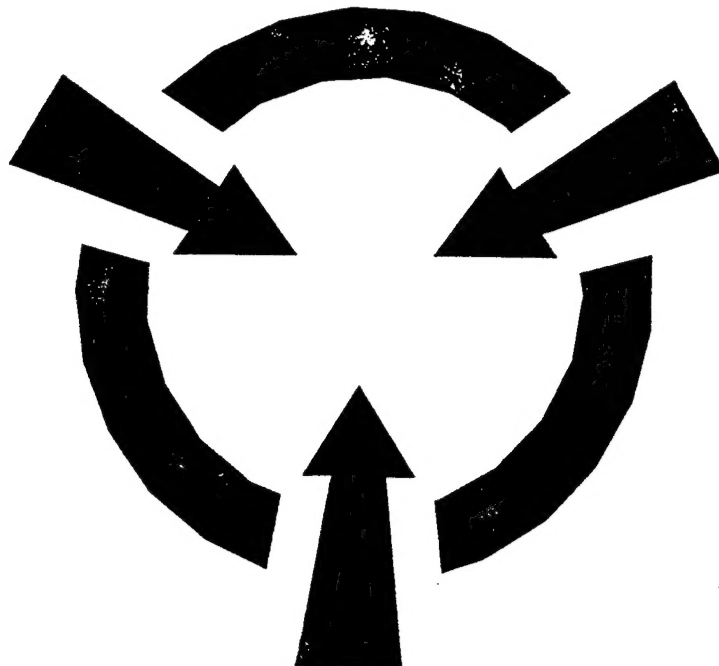




### 13.1.6 Output Harvard Graphics

# *CAUTION*

---



### 13.1.7 Output Ventura Publisher

CAUTION

---

